

### **Remarks**

Applicants thank the Examiner for examining the claims of the present application. With entry of this amendment, claims 1 through 26 will remain pending in the application. Applicants traverse all of the Examiner's rejections and request reconsideration of the application in view of the following remarks.

#### **The July 29, 2005, Information Disclosure Statement**

The Examiner alleges that the Information Disclosure Statement (IDS) filed on July 29, 2005, fails to comply with 37 C.F.R. 1.98(a)(2) because the non-U.S.-patent publications on the accompanying Form 1449 were not provided.

The Examiner's attention is drawn to the fact that the applicants filed this application as a continuation-in-part application, and thus claimed priority under 35 U.S.C. § 120. Consequently, copies of the references do not need to be provided to the Office pursuant to C.F.R. § 1.98(d) because: (1) the earlier applications were properly identified in the July 29, 2005, IDS; (2) the current application relies on 35 U.S.C. § 120 for an earlier effective filing date; and (3) the references were cited in IDSs in the earlier application that complied with § 1.98.

Accordingly, Applicants believe that copies of the cited references do not need to be provided and request that the Examiner consider and initial all references on the July 29, 2005, Form 1449.

#### **All Elements of Claim 1 Are Not Taught or Suggested By the Combination of *Sheen* and *Yukl '761* or *Yukl '691***

The Examiner rejects claim 1 under 35 U.S.C. § 103(a) as being obvious over Patent No. 5,859,609 ("*Sheen*") in view of either U.S. Patent No. 6,057,761 ("*Yukl '761*") or U.S. Patent No. 6,927,691 ("*Yukl '691*"). (Office action at pgs. 2-3.) The Examiner's rejection is traversed.

Claim 1 has been amended to correct a minor informality. Amended claim 1 recites a system comprising:

two or more arrays spaced apart from each other to define an interrogation region therebetween, the arrays each being structured to turn about the interrogation region to interrogate a person in the interrogation region with

electromagnetic radiation at one or more frequencies in a range of about 200 MHz to about 1 THz to provide corresponding interrogation signals;

one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals and generate an output as a function of the data; and

a device responsive to the output to provide an indication to an operator if the person is suspected of carrying one or more concealed objects that pose a threat to security.

*Sheen* describes a reconstruction algorithm for forming images from data obtained from a section of a 360° cylindrical aperture. (*Sheen*, col. 2, lines 8-21.) The summary of *Sheen* explains: “Subsets of the 360° data may be used to form images of the target from any cylindrical viewing position or viewing angle. . . . Computer generated animation permits sequential viewing of images incremented by viewing angle. When the increments are small enough, the image will appear that the target is rotating slowly. An operator is then able to fully visually inspect the target for concealed objects.” (*Sheen*, col. 2, lines 11-21.)

The section of *Sheen* relied on by the Examiner reiterates that the result of the *Sheen* algorithm is “a single image from a single viewing angle or arc segment of the 360° data.” (*Sheen*, col. 9, lines 35-37.) As discussed in *Sheen*, viewing around corners or within depressions of the target is accomplished by reconstructing and viewing images from other arc segments centered at different angles. The images viewed, however, are two-dimensional images. *Sheen* explains: “For example, for imaging a clothed person, an imaging sequence may use 90° arc segments overlapped in 10° increments, or 0°-90°, 10-100°, . . . , 350°-80°, to form 36 images with illuminations centered at 10° increments.” (*Sheen*, col. 9, lines 39-43.) Although the images produced from the *Sheen* reconstruction algorithm can be sequentially viewed, the images remain separate two-dimensional images.

By contrast, claim 1 recites “one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals.” Just as photographs of an object do not teach a topographical representation of the object, the single images from different viewing angles or arc segments in *Sheen* do not teach or suggest “a topographical image determined from the interrogation signals” as in amended claim 1.

*Yukl '761* likewise does not teach or suggest “one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals” as in claim 1. *Yukl '761* describes a security system that uses the dielectric response of a subject

to microwaves to determine the presence of weapons and contraband. (*Yukl '761*, abstract.) FIGS. 7A and 7B of *Yukl '761* show two computer display screens illustrating how contraband on a subject is shown to security personnel through the use of wire-frame human figures. (*Yukl '761*, FIGS. 7A-7B, col. 8, lines 62-67; col. 9, lines 1-38.) *Yukl '761* explains that the wire-frame figure is a “generic wire-frame human figure.” (*Yukl '761*, col. 8, lines 62-67; col. 9, lines 1-5.) In fact, *Yukl '761* emphasizes that “the novel use of generic wire-frame depictions of the human figure avoids privacy-invasive, immodest suggestions of individual physical characteristics of human subjects that are typical of prior art screening systems.” (*Yukl '761*, col. 9, lines 1-5.) Because the wire-frame depiction of *Yukl '761* is generic and not determined from data obtained from interrogation, *Yukl '761* does not teach or suggest “one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals” as in claim 1.

*Yukl '691* similarly teaches “generic” wire-frame depictions of subjects. In particular, *Yukl '691* notes that “FIG. 4 shows the other particularly useful kind of visual display which presents a generic wire-form anatomy illustration whereon regions of anomaly interest may similarly be highlighted or darkened.” (*Yukl '691*, col. 10, lines 60-64.) In fact, *Yukl '691* notes that “operation of the system of this invention produces no photographic picturing of a person whose body is being scanned.” (*Yukl '691*, col. 10, lines 45-47.) Because the wire-frame depiction of *Yukl '691* is generic and not determined from data obtained from interrogation, *Yukl '691* also does not teach or suggest “one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals” as in claim 1.

Accordingly, neither *Sheen*, *Yukl '761*, nor *Yukl '691* teach or suggest “one or more processors operable to establish data corresponding to a topographical image determined from the interrogation signals” as in claim 1.

Because all claim limitations are not taught or suggested by the prior art, the Examiner’s § 103(a) rejection of independent claim 1 should be withdrawn and such action is respectfully requested. (See MPEP 2143.04: “To establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art.”)

### **Dependent Claims 2-7 Are Also Allowable**

The Examiner rejects dependent claims 2-7 as being either obvious over *Sheen* in view either *Yukl '761* or *Yukl '691*. (Office action at pgs. 3-4.) The Examiner's rejections are all traversed.

Claims 2-7 are dependent on amended independent claim 1 and are allowable for at least the reasons stated above with respect to amended claim 1. Further, claims 2-7 are each independently patentable because of the unique and nonobvious features of the combinations set forth in each claim.

For example, claim 4 recites the system of claim 1 wherein "the panel for each of the arrays is at least partially transparent to facilitate viewing therethrough by an operator." The Examiner admits that this feature is not taught by the combination of *Sheen* and *Yukl '761* or *Yukl '691* but contends that such panels are "very well known" without citation to any documentary evidence. (Office action at pg. 3.) Applicants disagree and traverse the Examiner's contention. As explained in MPEP 2144.03, official notice of facts unsupported by documentary evidence should only be taken where the facts asserted to be common knowledge are capable of instant and unquestionable demonstration as being well-known. Providing an array that is at least partially transparent cannot be said to be capable of instant and unquestionable demonstration. Arrays for interrogating a subject are complex electrical devices that do not inherently have a transparent portion as recited in claim 4. The Examiner's rejection of claim 4 should therefore be withdrawn.

Further, claim 5 recites the system of claim 1 wherein "the one or more processors include means for generating the output in a form representative of one or more cross sectional views of the person." The Examiner contends that the combination of *Sheen* and *Yukl '761* or *Yukl '691* teaches the recited feature. (Office action at pg. 3.) As seen from FIGS. 11 and 12 of *Sheen*, however, the images output from the *Sheen* algorithm are not cross-sectional views. Further, the output from the methods of *Yukl '761* and *Yukl '691* are likewise not cross-sectional views. Instead, in *Yukl '761*, data obtained from scanning is displayed as either a response waveform (as in FIGS. 6A and 6B) or as a graphic indicator on a generic wire-frame depiction (as in FIGS. 7A and 7B). (*Yukl '761*, col. 8, lines 13-20; col. 9, lines 1-13.) In *Yukl '691*, data obtained from scanning is displayed as either regions on a grid-like, or checkerboard-like, layout of different-brightness gray-scale patches (as in FIG. 3) or as graphics on a generic wire-frame

depiction (as in FIG. 4). (*Yukl '691*, col. 10, lines 45-67.) The Examiner's rejection of claim 5 should therefore be withdrawn.

Still further, claim 7 recites the system of claim 1 wherein the one or more processors are operable to generate the data by "combining data sets corresponding to a number of different cylindrical images." The Examiner contends that the combination of *Sheen* and *Yukl '761* and *Yukl '691* teaches the recited feature. (Office action at pg. 4.) As explained above, *Sheen* describes a reconstruction algorithm that produces "a single image from a single viewing angle or arc segment of the 360° data." (*Sheen*, col. 9, lines 35-37.) Although the two-dimensional images produced from the *Sheen* reconstruction algorithm can be sequentially viewed, the images are separate images and are not combined as the data sets in claim 7 are. Furthermore, *Yukl '761* and *Yukl '691* concern interrogating a subject with microwave energy and monitoring the dielectric response of the subject, not with producing data sets corresponding to cylindrical images, which can be combined as in claim 7. The Examiner's rejection of claim 7 should therefore be withdrawn.

**All Elements of Claim 8 Are Not Taught or Suggested By the Combination of *Sheen* and *Yukl '761* or *Yukl '691***

The Examiner rejects claim 8 under 35 U.S.C. § 103(a) as being obvious over *Sheen* in view of either *Yukl '761* or *Yukl '691*. (Office action at pg. 4-5.) The Examiner's rejection are traversed.

Claim 8 recites a system comprising:

- providing two or more arrays each shaped to turn about a person positioned between the arrays;
- operating the arrays to perform an interrogation of the person with electromagnetic radiation at one or more frequencies in a range of about 200 MHz to about 1 THz; and
- generating cylindrical image data corresponding to a number of cylindrical images from the interrogation to detect if the person is concealing an object.

As explained above with respect to claim 1, *Sheen* describes a reconstruction algorithm that produces "a single image from a single viewing angle or arc segment of the 360° data." (*Sheen*, col. 9, lines 35-37.) Computer-generated animation can be performed by sequentially viewing images having incrementally increasing or decreasing viewing angles. (*Sheen*, col. 2, lines 11-21.)

Although the two-dimensional images produced from the *Sheen* reconstruction algorithm can be sequentially viewed, the images remain separate images. Thus, “cylindrical image data corresponding to a number of cylindrical images” as in claim 8 is not generated in *Sheen*.

Furthermore, because *Yukl '761* and *Yukl '691* concern interrogating a subject with microwave energy and monitoring the dielectric response of the subject instead of imaging the subject, *Yukl '761* and *Yukl '691* do not teach or suggest “generating cylindrical image data corresponding to a number of cylindrical images from the interrogation to detect if the person is concealing an object” as in claim 8. In fact, *Yukl '761* distinguishes imaging systems by noting that “[i]maging approaches to personnel screening tend to be invasive of a person’s privacy and modesty. In other words, screening systems that image the person’s body penetrate the person’s clothes and highlight the person’s physical attributes, effectively undressing the person.” (*Yukl '761*, col. 1, lines 54-58.)

Accordingly, neither *Sheen*, *Yukl '761*, nor *Yukl '691* teach or suggest “generating cylindrical image data corresponding to a number of cylindrical images from the interrogation to detect if the person is concealing an object” as in claim 8.

Because all claim limitations are not taught or suggested by the prior art, the Examiner’s § 103(a) rejection of independent claim 8 should be withdrawn and such action is respectfully requested. (See MPEP 2143.04: “To establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art.”)

#### **Dependent Claims 9-14 Are Also Allowable**

The Examiner rejects dependent claims 9-14 as being either obvious over *Sheen* in view either *Yukl '761* or *Yukl '691*. (Office action at pgs. 4-5.) The Examiner’s rejections are all traversed.

Claims 9-14 are dependent on independent claim 8 and are allowable for at least the reasons stated above with respect to claim 8. Further, claims 9-14 are each independently patentable because of the unique and nonobvious features of the combinations set forth in each claim.

For example, claim 12 recites the method of claim 8, “which includes displaying one or more cross sectional views of the person based on the topographical image data.” The Examiner contends that the combination of *Sheen* and *Yukl '761* or *Yukl '691* teaches the recited feature.

(Office action at pg. 4.) As seen from FIGS. 11 and 12 of *Sheen*, however, the images output from the *Sheen* algorithm are not cross-sectional views. Further, the output from the methods of *Yukl '761* and *Yukl '691* are likewise not cross-sectional views. Instead, in *Yukl '761*, data obtained from scanning is displayed as either a response waveform (as in FIGS. 6A and 6B) or as a graphic indicator on a generic wire-frame depiction (as in FIGS. 7A and 7B). (*Yukl '761*, col. 8, lines 13-20; col. 9, lines 1-13.) In *Yukl '691*, data obtained from scanning is displayed as either regions on a grid-like, or checkerboard-like, layout of different-brightness gray-scale patches (as in FIG. 3) or as graphics on a generic wire-frame depiction (as in FIG. 4). (*Yukl '691*, col. 10, lines 45-67.) The Examiner's rejection of claim 12 should therefore be withdrawn.

Further, claim 13 recites the method of claim 8, "which includes generating topographical image data from the cylindrical image data." The Examiner contends that the combination of *Sheen* and *Yukl '761* or *Yukl '691* teaches the recited feature. *Sheen* describes a reconstruction algorithm that produces "a single image from a single viewing angle or arc segment of the 360° data." (*Sheen*, col. 9, lines 35-37.) Although the two-dimensional images produced from the *Sheen* reconstruction algorithm can be sequentially viewed in order to view all angles of a subject, the individual images are not topographical images. Further, *Yukl '761* and *Yukl '691* only teach or suggest the use of "generic" wire-frame human figures that are not generated from data obtained from interrogation. (*Yukl '761*, col. 8, lines 62-67; col. 9, lines 1-5; *Yukl '691*, col. 10, lines 60-64.) The Examiner's rejection of claim 13 should therefore be withdrawn.

**All Elements of Claim 15 Are Not Taught or Suggested By the Combination of *Sheen* and *Yukl '761* or *Yukl '691***

The Examiner rejects independent claim 15 under 35 U.S.C. § 103(a) as being obvious over *Sheen* in view of either *Yukl '761* or *Yukl '691*. (Office action at pages 4-5.) The Examiner's rejection is traversed.

Claim 15 recites a method, comprising:

- generating electromagnetic radiation at one or more frequencies in a range of about 200 MHz to about 1 THz with two or more arrays to perform an interrogation of a person positioned between the two or more arrays;
- moving at least one of the arrays along a nonstraight path about the person during the interrogation; and
- generating topographical image data from the interrogation to detect if the person is concealing an object.

As explained above with respect to claim 1, *Sheen* describes a reconstruction algorithm that produces “a single image from a single viewing angle or arc segment of the 360° data.” (*Sheen*, col. 9, lines 35-37.) Computer-generated animation can be performed by sequentially viewing reconstructing images that have incrementally increasing or decreasing viewing angles. (*Sheen*, col. 2, lines 11-21.) Although the two-dimensional images produced from the *Sheen* reconstruction algorithm can be sequentially viewed in order to view all angles of a subject, the individual images are not topographical images. Accordingly, *Sheen* does not teach or suggest “generating topographical image data from the interrogation to detect if the person is concealing an object” as in claim 15.

Further, and as explained above with respect to claim 1, *Yukl '761* and *Yukl '691* only teach or suggest the use of “generic” wire-frame human figures. (*Yukl '761*, col. 8, lines 62-67; col. 9, lines 1-5; *Yukl '691*, col. 10, lines 60-64.) Accordingly, because the wire-frame depictions of *Yukl '761* and *Yukl '691* are generic and not generated from data obtained from interrogation, neither *Yukl '761* nor *Yukl '691* teach or suggest “generating topographical image data from the interrogation to detect if the person is concealing an object” as in claim 15.

Accordingly, neither *Sheen*, *Yukl '761*, nor *Yukl '691* teach or suggest “generating topographical image data from the interrogation to detect if the person is concealing an object” as in claim 15.

Because all claim limitations are not taught or suggested by the prior art, the Examiner’s § 103(a) rejection of independent claim 15 should be withdrawn and such action is respectfully requested. (See MPEP 2143.04: “To establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art.”)

#### **Dependent Claims 16-20 Are Also Allowable**

The Examiner rejects dependent claims 16-20 as being either obvious over *Sheen* in view either *Yukl '761* or *Yukl '691*. (Office action at pgs. 4-5.) The Examiner’s rejections are all traversed.

Claims 16-20 are dependent on independent claim 15 and are allowable for at least the reasons stated above with respect to claim 15. Further, claims 16-20 are each independently



patentable because of the unique and nonobvious features of the combinations set forth in each claim.

For example, claim 19 recites the method of claim 15, “which includes displaying one or more cross sectional views of the person based on the topographical image data.” The Examiner contends that the combination of *Sheen* and *Yukl* ‘761 or *Yukl* ‘691 teaches the recited feature. (Office action at pg. 5.) As seen from FIGS. 11 and 12 of *Sheen*, however, the images output from the *Sheen* algorithm are not cross-sectional views. Further, the output from the methods of *Yukl* ‘761 and *Yukl* ‘691 are likewise not cross-sectional views. Instead, in *Yukl* ‘761, data obtained from scanning is displayed as either a response waveform (as in FIGS. 6A and 6B) or as a graphic indicator on a generic wire-frame depiction (as in FIGS. 7A and 7B). (*Yukl* ‘761, col. 8, lines 13-20; col. 9, lines 1-13.) In *Yukl* ‘691, data obtained from scanning is displayed as either regions on a grid-like, or checkerboard-like, layout of different-brightness gray-scale patches (as in FIG. 3) or as graphics on a generic wire-frame depiction (as in FIG. 4). (*Yukl* ‘691, col. 10, lines 45-67.) The Examiner’s rejection of claim 19 should therefore be withdrawn.

Further, claim 20 recites the method of claim 15, “which includes generating the topographical image data from a number of cylindrical image data sets.” The Examiner contends that the combination of *Sheen* and *Yukl* ‘761 or *Yukl* ‘691 teaches the recited feature. (Office action at pg. 5.) *Sheen* describes a reconstruction algorithm that produces “a single image from a single viewing angle or arc segment of the 360° data.” (*Sheen*, col. 9, lines 35-37.) Although the two-dimensional images produced from the *Sheen* reconstruction algorithm can be sequentially viewed in order to view all angles of a subject, the images are not topographical images. Further, *Yukl* ‘761 and *Yukl* ‘691 only teach or suggest the use of “generic” wire-frame human figures that are not generated from data obtained from scanning. (*Yukl* ‘761, col. 8, lines 62-67; col. 9, lines 1-5; *Yukl* ‘691, col. 10, lines 60-64.) The Examiner’s rejection of claim 20 should therefore be withdrawn.

**All Elements of Claim 21 Are Not Taught or Suggested By the Combination of *Sheen* and *Yukl* ‘761 or *Yukl* ‘691**

At the outset, it is noted that with respect to independent claim 21, the Examiner does not recite the claim, and thus does not expressly identify the portions of the applied references believed to teach the elements of claim 21 as required by 37 C.F.R. § 1.104(c)(2). Accordingly,

the Office action is not believed to be a proper action on the merits, and any subsequent action should not be final. (*See* MPEP 706.07(a).) Applicants will nonetheless respond to the Examiner's concerns as best as possible.

The Examiner rejects independent claim 21 under 35 U.S.C. § 103(a) as being obvious over *Sheen* in view of either *Yukl '761* or *Yukl '691*. The Examiner's rejection is traversed.

Claim 21 recites a method, comprising:

- performing an interrogation of a person with electromagnetic radiation including one or more frequencies in a range of about 200 MHz to about 1 THz;
- generating one or more cross-sectional images of the person based on the interrogation; and
- determining if the person is carrying a concealed object that poses a threat to security from at least one of the one or more cross-sectional images.

As explained above with respect to claim 1, *Sheen* describes a reconstruction algorithm that produces "a single image from a single viewing angle or arc segment of the 360° data." (*Sheen*, col. 9, lines 35-37.) The resulting image is a "fully-focused two-dimensional image of the target for display on the computer." (*Sheen*, col. 5, lines 34-36.) Examples of the images created are shown in FIG. 11 and FIG. 12. As can be seen from the figures, the images produced by the *Sheen* algorithm are not cross-sectional images (illustrated in the present application, for example, in FIG. 8.) Accordingly, *Sheen* does not teach or suggest at least "generating one or more cross-sectional images of the person based on the interrogation" or "determining if the person is carrying a concealed object that poses a threat to security from at least one of the one or more cross-sectional images" as in claim 21.

Furthermore, *Yukl '761* and *Yukl '691* concern interrogating a subject with microwave energy and monitoring the dielectric response of the subject (*Yukl '761*, col. 10, lines 23-57; *Yukl '691*, col. 1, lines 13-20.) In *Yukl '761*, data obtained from scanning is displayed as either a response waveform (as in FIGS. 6A and 6B) or as a graphic indicator on a generic wire-frame depiction (as in FIGS. 7A and 7B). (*Yukl '761*, col. 8, lines 13-20; col. 9, lines 1-13.) In *Yukl '691*, data obtained from scanning is displayed as either regions on a grid-like, or checkerboard-like, layout of different-brightness gray-scale patches (as in FIG. 3) or as graphics on a generic wire depiction (as in FIG. 4). (*Yukl '691*, col. 10, lines 45-67.) Nowhere, however, does *Yukl '761* or *Yukl '691* teach or suggest "generating one or more cross-sectional images of the person based on the interrogation" or "determining if the person is carrying a concealed object that

poses a threat to security from at least one of the one or more cross-sectional images” as in claim 21.

Accordingly, neither *Sheen*, *Yukl* '761, nor *Yukl* 691 teach or suggest “generating one or more cross-sectional images of the person based on the interrogation” or “determining if the person is carrying a concealed object that poses a threat to security from at least one of the one or more cross-sectional images” as in claim 21.

Because all claim limitations are not taught or suggested by the prior art, the Examiner’s § 103(a) rejection of independent claim 21 should be withdrawn and such action is respectfully requested. (*See* MPEP 2143.04: “To establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art.”)

#### **Dependent Claims 22-26 Are Also Allowable**

The Examiner rejects dependent claims 22-26 as being either obvious over *Sheen* in view either *Yukl* '761 or *Yukl* '691. (Office action at pgs. 4-5.) The Examiner’s rejections are all traversed.

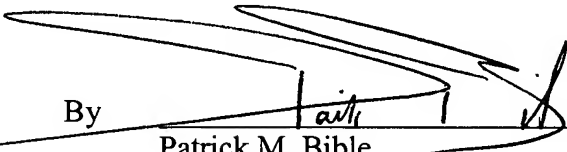
Claims 22-26 are dependent on independent claim 21 and are allowable for at least the reasons stated above with respect to claim 21. Further, claims 22-26 are each independently patentable because of the unique and nonobvious features of the combinations set forth in each claim.

**Conclusion**

In view of the above amendment and remarks, this application is believed to be in condition for allowance and such action is respectfully requested. If any further issues remain concerning this application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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